APPENDIX A

LIST OF COMMENTERS

IMPLEMENTATION OF THE LOCAL COMPETITION PROVISIONS
IN THE TELECOMMUNICATIONS ACT OF 1996

CC Docket No. 96-98

360 Degree Communications Company (formerly Sprint Cellular Co.) ("360 Degree Comm.")
Ad Hoc Coalition of Corporate Telecommunications Managers ("Ad Hoc Tel. Manags. Assoc.")
Ad Hoc Telecommunications Users Committee ("Ad Hoc Users")
Airtouch Communications ("Airtouch")
Alabama PSC
Alaska PUC
Alaska Telephone Association ("Alaska Tel. Assoc.")
Alliance for Public Technology ("Alliance for Pub. Tech.")
Allied Associated Partners, LP & Geld Information Systems ("Allied")
Alltel Telephone Services Corp. ("Alltel")
America's Carriers Telecommunication Association ("ACTA")
American Communications Services, Inc. ("ACS")
American Foundation for the Blind ("Am. Found. for Blind")
American Mobile Telecommunications Association, Inc. ("American Mobile")
American Network Exchange, Inc. & US Long Distance, Inc. ("American Network")
American Personal Communications ("APC")
American Petroleum Institute ("API")
American Public Communications Council ("Am. Pub. Comm. Council")
American Public Power Association ("APPA")
Ameritech
Anchorage Telephone Utility ("Anchorage Tel.")
Arch Communications Group, Inc. ("Arch")
Arizona Corporation Commission ("Arizona Comm.")
Association for Local Telecommunications Services ("ALTS")
Association for Study of Afro-American Life & History, Inc. ("ASALM")
AT&T Corp. ("AT&T")
Bay Springs et al. ("Bay Springs")
Bell Atlantic
Bell Atlantic Nynex Mobile, Inc. ("Bell Atlantic Mobile")
BellSouth
Black Data Processors Association ("BDPA")
Bogue, Kansas ("Bogue")
Buckeye Cablevision ("Buckeye")
Cable & Wireless, Inc. ("C&W")
California PUC & People of the State of California ("California PUC")
Cellular Telecommunications Industry Association ("CTIA")
Centennial Cellular Corp. ("Centennial")

Chrysler Minority Dealers Association ("Chrysler")
Cincinnati Bell Telephone Co. ("Cincinnati Bell")
Citizens Utilities Co. ("Citizens")
Colorado Independent Telephone Association ("Colorado ITA")
Colorado PUC
Comav, Corp. ("Comav")
Comcast Corp. ("Comcast")
Communications & Energy Dispute Resolution Association ("CEDRA")
Competition Policy Institute ("CPI")
Competitive Telecommunications Association ("CompTel")
Connecticut Dept. of Public Utility Control ("Conn. DPUC")
Consumer Federation of America ("CFA") & Consumers Union ("CU")
Continental Cablevision, Inc. ("Continental")
Cox Communications, Inc. ("Cox")
Crumpton, Harold, Commissioner, Missouri PSC ("Crumpton")
DeSoto County, Mississippi, Economic Development Council ("DeSoto Co.")
District of Columbia PSC ("D.C. PSC")
Economides, Professor Nicholas, Stern School of Business, NYU ("Economidos")
Ericsson Corp. ("Ericsson")
Excel Telecommunications, Inc. ("Excel")
Florida PSC ("Florida PSC")
Fred Williamson & Associates ("Williamson")
Frontier Corp. ("Frontier")
General Communications, Inc. ("General")
General Services Administration & United States Department of Defense ("GSA")
Georgia Public Service Commission ("Georgia PSC")
Greater Washington Urban League ("GWUL")
GTE Service Corp. ("GTE")
GVNW Inc./Management ("GVNW")
Hart Engineers ("Hart")
Home Telephone Co. ("HTC")
Hyperion Telecommunications, Inc. ("HTI")
Idaho PUC
Illinois Commerce Commission ("Illinois Comm.")
Illinois Independent Telephone Association ("IITA")
Indiana Utility Regulatory Commission Staff ("Indiana URC")
Information Technology Industry Council ("ITIC")
Intelcom Group (USA), Inc. ("Intelcom")
Intermedia Communications, Inc. ("Intermedia")
Iowa Utilities Board ("Iowa")
Jones Intercable, Inc. ("Jones")
Kansas Corporation Commission ("Kansas Comm.")
Kentucky PSC
Koch, Richard N. ("Koch")
LCI International Telecom Corp. ("LCI")
Lincoln Telephone & Telegraph Co. ("Lincoln Tel.")

LDDS Worldcom ("LDDS")
Louisiana Public Service Commission ("Louisiana PSC")
Lucent Technologies ("Lucent")
Maryland PSC
Massachusetts Dept. Of Public Utilities ("Mass. DPU")
Massachusetts Office of Attorney General ("Mass. AG")
Matanuska Telephone Association ("Matanuska")
MCI Telecommunications Corp. ("MCI")
ME, MT, NE, NH, NM, UT, VT & SD PUC ("Maine et al.")
Metricom, Inc. ("Metricom")
MFS Communications Co., Inc. ("MFS")
Michigan Exchange Carriers Association ("MECA")
Michigan PSC Staff ("Michigan PSC")
Minnesota Independent Coalition ("MIC")
Missouri PSC
Mobilemedia Communications Inc. ("Mobilemedia")
Municipal Utilities
National Association of Development Organizations, Gray Panthers, et al. (NADO, et al.")
National Association of Regulatory Utility Commissioners ("NARUC")
National Association of State Utility Consumer Advocates ("NASUCA")
National Bar Association ("NBA")
National Cable Television Association, Inc. ("NCTA")
National Exchange Carrier Association ("NECA")
National Wireless Resellers Association ("NWRA")
New Jersey Board of Public Utility ("New Jersey BPU")
New York State Consumer Protection Board ("New York CPB")
New York State Dept. of Public Service ("New York DPS")
Nextel Communications, Inc. ("Nextel")
Nextlink Communications, LLC ("Nextlink")
North Carolina Utilities Commission ("N. Carolina Comm.")
North Dakota PSC
Northern Telecom ("NorTel")
NYNEX Telephone Companies ("NYNEX")
Ohio Consumers Counsel
Ohio PUC
Oklahoma Corporation Commission ("Oklahoma Comm.")
Omnipoint Corp. ("Omnipoint")
Oregon PUC
Pacific Telesis Group ("Pacific")
Paging Network, Inc. ("PNI")
Pennsylvania PUC ("Penn. PUC")
Personal Communications Industry Association ("PCIA")
Pronet, Inc. ("Pronet")
Puerto Rico Telephone Co. ("Puerto Rico Tel.")
Roseville Telephone Co. ("Roseville Tel.")
Rural Telephone Coalition ("RTC")

SBC Communications Inc. ("SBC")
Scherers Communications Group, Inc. ("Scherers")
SDN Users Association ("SDNUA")
Second Network Reliability Council Secretariat ("SNRCS")
Small Business Administration, Office of Advocacy ("SBA")
Small Cable Business Association ("SCBA")
South Carolina PSC ("S.C. PSC")
Southern New England Telephone Co. ("NET")
Sprint Corp. ("Sprint")
Sprint Spectrum & American Person Communications ("Sprint Spectrum")
Staurulakis, John, Inc. ("Staurulakis")
TCA, Inc. ("TCA")
TDS Telecommunications Corp. ("TDS")
Telecommunications Carriers for Competition ("TCC")
Tele-Communications, Inc. ("TCI")
Telecommunications Industries Analysis Project ("TIAP")
Telecommunications Industry Association ("TIA")
Telecommunications Resellers Association ("TRA")
Telefonica Larga Distancia De Puerto Rico, Inc. ("TLD")
Teleport Communications Group Inc. ("Teleport")
Texas Office of Public Utility Counsel ("Tex Off of Pub. Util. Counsel")
Texas PUC
Texas Statewide Telephone Cooperative, Inc ("TSTC")
Texas Telephone Association ("TTA")
Time Warner Communications Holdings, Inc. ("Time Warner")
Unicom, Inc. ("Unicom")
United Calling Network, Inc. ("UCN")
United Cerebral Palsy Associations ("UCPA")
United States Department of Justice ("DOJ")
United States Secretary of Defense ("DOD")
United States Small Business Administration ("SBA")
United States Telephone Association ("USTA")
U S West
UTC
Utilex, Inc. ("Utilex")
Vanguard Cellular Systems, Inc. ("Vanguard")
Vartec Telecom, Inc., Transtel, et al. ("VARTEC")
Virginia State Corporation Commission Staff ("Virginia Comm.")
Washington Independent Telephone Association ("WITA")
Western Alliance ("Western")
Winstar Communications Inc. ("Winstar")
Wyoming PSC

APPENDIX B

REPLY AFFIDAVIT OF WILLIAM J. BAUMOL, JANUSZ A. ORDOVER, AND ROBERT D. WILLIG

1. We are pleased to note that the ILECs' economist affiants take positions that make convergence among our views possible. As Dr. Crandall puts the most fundamental point, "From an economic standpoint, the pricing of any network function, whether for termination, interconnection, or any other purpose, should be based on long-run incremental costs." Crandall, p. 11. Drs. Beauvais, Harris & Yao, and Hausman also acknowledge, to varying degrees, the soundness of basing prices on TSLRIC. Beauvais, pp. 2-4; Harris & Yao, p. 5; Hausman, pp. 2 & 3. These economists, however, raise several issues that urgently require further exploration, because if not cleared up, they can lead to policy measures that impede competition and economic efficiency. We comment on each of these matters in turn.

I. TSLRIC-BASED PRICING IS FULLY COMPENSATORY.

2. The ILECs' affiants contend that "pure" TSLRIC pricing, by excluding costs that are common to or shared by multiple network elements, would prevent full recovery of forward-looking costs and discourage efficient make-or-buy decisions. Beauvais, pp. 4, 7, 9-13; Harris & Yao, p. 18; Hausman, pp. 4-5. Neither we nor AT&T have proposed LRIC or "pure" TSLRIC (e.g., ignoring shared and common costs) pricing at the individual network element level, however. Although we are skeptical that significant common or shared costs exist, we agree that prices for individual network elements should permit the recovery of any significant forward-looking, efficient shared or common costs incurred in providing network elements, subject to a stand-alone cost ("SAC") ceiling and an imputation rule. These constraints allow ILECs to recover *all* of the costs that a competitive market would allow efficient firms to recover.

3. Drs. Harris, Yao and Hausman also contend that prices above TSLRIC are necessary to permit full recovery of future investment by ILECs in the face of technological change and obsolescence. Harris & Yao, p. 19; Hausman, pp. 6-7 & n. 4. This contention betrays unwarranted pessimism about TSLRIC pricing and the performance of competitive markets. The semiconductor, disk drive, fiber optic, and telecommunications equipment industries are only a few of the many capital-intensive industries in which intensely competitive prices have coexisted with rapid innovation. Prices in competitive markets reflect the forward-looking costs of the most efficient technology that is *generally available*, not experimental prototypes and proprietary initiatives to outdo rivals. The impetus for an individual firm to adopt an innovation is the prospect of above-average returns, however temporary, from bettering generally available technology. While the payoff from an innovation erodes with its diffusion over time, a competitive market provides a stream of revenue that is exactly sufficient to recoup the necessary investment over the economic lifetime of the pertinent assets if the actual rate of technological change (and other market conditions) match expectations.[1] The value of that revenue stream equals TSLRIC -- not TSLRIC-plus-a-markup.[2]

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[1] *See, e.g.*, William J. Baumol, "Optimal Depreciation Policy: Pricing the Products of Durable Assets," 2 *Bell J. of Economics and Management Science* 365-76 (Autumn 1971). Unexpectedly fast or slow technological change, like any other after-the-fact departure from expected market conditions, can cause the actual return on any particular investment to exceed or fall short of expectations. On average over time, however, actual returns on investment should closely approximate expected returns.

[2] Dr. Hausman's further claim that TSLRIC pricing would deny ILECs a "reasonable profit" because "fixed and sunk" costs incurred in the future "will not be counted in the forward looking costs of a LRIC study" (Hausman, pp. 7-8) confuses short run and long run costs. TSLRIC, as its name indicates, is a long-run cost measure: it assumes a time period long enough so that all sunk investment must be replaced. The cost of efficient additional investment in long-lived assets needed to produce network elements is properly included in TSLRIC *even if some or all of the investment will become sunk once put in place*.

II. EMBEDDED COST ADDITIVES ARE UNJUSTIFIED.

4. Some affiants argue that prices for network elements should be permitted to exceed TSLRIC by a margin wide enough to provide full "recovery of the embedded costs incurred to meet regulatory service obligations" in the past. They suggest that such a recovery is required by an implicit regulatory bargain or compact between the ILECs and their regulators that stems from the failure of past depreciation charges to keep pace with the diminution over time of the present value of the expected income stream from the ILECs' existing assets. Breaching such a bargain, the ILECs argue, would discourage them from making efficient levels of investment in the future. Harris & Yao, p. 20; Hausman, pp. 4-6.

5. As an initial matter, the suggestion that levels of stranded plant could ever be measured simply by comparing the ILECs' current accounting cost-based revenue requirements with the TSLRIC of providing unbundled network elements is plainly wrong. There are any number of reasons why those two figures would diverge. Most fundamentally, for example, large portions of the difference may reflect the very inefficiencies, overearnings, cross-subsidies, and imprudent investments that the competitive market model is designed to drive out. To allow concern over the ILECs' prospective inability to recover such "costs" to prevent or delay efficient pricing would be anticompetitive, inefficient, and contrary to the spirit of the 1996 Act. Thus, even if a regulatory bargain were pertinent here, the costs at issue would be limited to the costs in investments that (1) were prudently made and necessary to provide the network elements at issue, (2) have not been depreciated as rapidly as warranted by the diminution in the earning power of the assets, and (3) cannot be mitigated.

6. The ILECs have not shown that these conditions hold. Indeed, the empirical analysis reported by AT&T witnesses Selwyn and Kravtin indicates that any such costs of obsolescence

are small. *See* Reply Affidavit of Selwyn and Kravtin.

7. We also understand that existing ILEC networks have been greatly overbuilt for present or foreseeable demand for narrowband telecommunications services, and that much if not most of the extra investment was made to anticipate future demand for video dial tone and other enhanced services. (Selwyn and Kravtin discuss this evidence in their separate affidavit.) If so, the extra costs of the investments should not be reflected in the prices for the network elements, which would constitute a cross subsidy provided to those other services that were the impetus for the extra investment. Rather, the costs should be covered in the prices for those other services that led to the extra investment (if and when those services are actually offered).[3]

8. In any event, it is hard to see how the regulatory compact theory would apply here, for little if any of the embedded investment now on the ILECs books could have been made in reasonable reliance on the long term survival of original cost ratemaking. According to Drs. Selwyn and Kravtin, most of the ILEC rate base reflects investments made during the 1990s, when price cap regulation had largely supplanted original cost regulation for the major ILECs. Price cap regulation creates neither a ceiling on earnings nor a guarantee of recoupment.

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[3] There are two possibilities. This extra investment may represent waste and inefficiency. If so, there is no legitimate competitive or regulatory basis for its recovery from prices charged for unbundled network elements. Alternatively, the extra investment may be efficient for the provision of some set of offerings that includes the regulated local exchange services, but that also includes some significant forthcoming additional services that will require expanded functionalities. If so, then the extra investment should not in any way add to the levels of the prices charged for the unbundled network elements that relate to the traditional regulated local exchange services. On the contrary, the pertinent TSLRIC is the cost of the network element that underlies the regulated local exchange service, as an *increment* relative to the expanded set of services. Because of economies of scope, this TSLRIC must be less than the cost of the network element alone, with no expanded set of services. Thus, inasmuch as the Hatfield TSLRIC of a network element, for example, is calculated without reference to and without combination with expanded services, it is a conservative estimate -- the true figure that reflects economies of scope with expanded services would be *lower*.

III. ADOPTION OF TSLRIC PRICING SHOULD NOT AWAIT REFORM OF END-USER PRICES.

9. The ILECs argue that implementation of TSLRIC pricing of network elements is premature and should be postponed until reform of the price structure for end-user services. Until the cross-subsidies and other anomalies in the end-user rate structure are eliminated, the ILECs reason, TSLRIC pricing for network elements would result in widespread cream-skimming and arbitrage to the ILECs' detriment (but to consumers' benefit). Crandall, pp. 10-11; Harris & Yao, pp. 8-10, 23, 26-30; Hausman, pp. 2 and 4.

10. We fully agree that, without a competitively-neutral distribution and funding mechanism for the subsidized end-user services, economic pricing of network elements, like facilities-based entry, would undermine the stability of cross-subsidies and anticompetitive distortions in the existing end-use rate structure. But the 1996 Act provides a mechanism to counteract this -- the universal service fund. Its use enables the subsidy of universal service (or any other service that regulators elect to subsidize) to coexist with economic pricing of network elements.

11. Further, delay of TSLRIC pricing to preserve cross-subsidies that regulators do *not* elect to fund in a competitively neutral manner approaches the matter in a way that is completely backwards. The quickest and surest way to reform end-user rates is to open the door to the competition that would ensue from TSLRIC pricing of unbundled network elements. No cross-subsidy can long survive effective competition, which automatically drives down the prices of overpriced services and thereby cuts off the source of financing of the nonremunerative services that are the recipients of cross subsidy.

12. In contrast, deferring TSLRIC pricing until end-user prices are fully reformed can delay pricing reform indefinitely. The 1996 Act requires freedom of competition, and assigns

the FCC responsibility for articulating principles that will promote, not impede it. If Drs. Hausman and Crandall really favor full and effective competition in the local arena, then they simply cannot proceed on the premise that distorted prices are here to stay, for that can become a self-fulfilling prophecy.

IV. ISSUES IN ESTIMATING TSLRIC

A. The Commission Should Not Limit TSLRIC Studies to Existing Network Architecture.

13. Dr. Crandall urges the Commission to forbid any use of TSLRIC studies based on network configurations and engineering assumptions that vary from existing ILEC networks, because studies based on optimal configurations, he asserts, would be too "arbitrary" and "hypothetical." Crandall ¶¶ 14-15, 20. This is unfounded. There undoubtedly will be instances when reliable evidence of a better alternative to existing network configurations and technology is lacking. But the logical response to such uncertainties is to use a best evidence standard: accept engineering assumptions that depart from existing ILEC engineering where the assumptions are reliable; otherwise accept existing network engineering as the best available proxy for the optimal design.

14. Both the Hatfield model and Surface Transportation Board have adopted this approach to estimating forward-looking costs. Their experience, and the experience of states with TSLRIC pricing, refute the notion that estimating forward-looking costs, based on engineering models of efficient network design and technology, is impractical.[4] Arbitrarily limiting TSLRIC

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[4] *All* cost-based ratemaking standards (including embedded cost ratemaking) involve hypothetical constructs. As Alfred Kahn has noted, "any system of pricing involves the exercise of judgment. The question is whether that judgment should be employed in order best to apply economically efficient principles or irrational principles. . . . An approximation, even one subject to a wide margin of error, to the correct answer is better than the wrong answer worked out to seven decimal places." Kahn, *The Economics of Regulation*, vol. 1, pp. 198-99.

studies to historical network architecture and engineering would create havens for inefficiency and deprive consumers of the full benefits of competition.[5]

B. Forward-Looking Capital Costs

15. Drs. Crandall, Harris and Yao argue that the business risk faced by ILECs under the proposed regulatory regime will be "markedly" higher than the risk they have historically faced, and that the cost of capital included in TSLRIC must be correspondingly higher than pre-1996 capital costs. Crandall, pp. 9-10; Harris & Yao, pp. 21-22. Two responses are warranted. First, increased competitive risk is most likely to arise at the retail, not carrier-to-carrier level. Indeed, TSLRIC-based prices for network elements should *reduce* the risk of inefficient competitive bypass of the ILEC's networks. Second, Selwyn and Kravtin point out that the bulk of the RBOCs' investment base has been installed since 1990, when the prospect for competitive incursions into the ILECs' markets was increasingly apparent. The ILECs' willingness to make these investments is evidence that they have regarded the current structure of returns as adequate to compensate for the competitive risks anticipated over the life of the new assets.[6]

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[5] Dr. Crandall's rhetorical contrast between "actual" (i.e., embedded) costs and "hypothetical" (i.e., prospective) costs (Crandall, pp. 8-9) has it backwards. Prospective costs *are* actual costs -- the actual costs of providing service with today's technology, prices, and know-how. Historic costs, in contrast, are *yesterday's* actual costs. Even more important, the process of *allocating* historical costs -- a crucial link in embedded cost ratemaking -- is intrinsically arbitrary. However the costs are allocated, the resulting numbers have zero economic content. In no economic sense may such costs be regarded as "actual" costs.

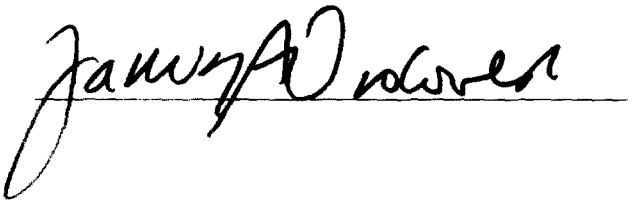
[6] USTA, citing Dr. Hausman, asserts that the "reasonable profit" contemplated by the 1996 Act requires a return on investment *in excess of* an ILEC's cost of capital (USTA Comments, p. 43). USTA's position is unsupported by the cited portions of Dr. Hausman's testimony (Hausman, ¶¶.12-13), or the views of any reputable economist known to us. "Reasonable profit," to economists, is a return on investment exactly equal to -- and not exceeding -- the firm's cost of capital. "Reasonable profit," or zero economic profit, is the return on investment permitted over the long run in competitive markets, and is the cost of capital built into TSLRIC. Contrary to USTA's assumption, competitive markets not only induce investors to "risk their capital in building new plants and facilities," but encourage optimal levels of such investment.

DECLARATION

I, William J. Baumol, declare under penalty of perjury that the foregoing is true and correct. Executed on May 24, 1996.

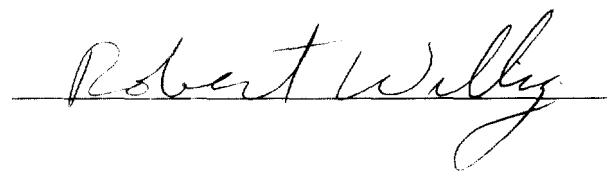
DECLARATION

I, Janusz A. Ordover, declare under penalty of perjury that the foregoing is true and correct. Executed on May 29, 1996.



DECLARATION

I, Robert D. Willig, declare under penalty of perjury that the foregoing is true and correct. Executed on May 29, 1996.



APPENDIX C

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of Implementation of the Local Competition Provisions of the Telecommunications Act of 1996	)	CC Docket No. 96-98

AFFIDAVIT OF LEE L. SELWYN AND PATRICIA D. KRAVTIN

1. Our names are Lee L. Selwyn and Patricia D. Kravtin, President and Vice President—Senior Economist, respectively, at Economics and Technology, Inc. (ETI). Our Statements of Qualifications appear as Attachments A and B to this affidavit. We submit this affidavit in reply to the Comments presented in response to the Commission's April 19, 1996 *Notice of Proposed Rulemaking* (NPRM) in CC Docket 96-98, Implementation of the Local Competition Provisions in the Telecommunications Act of 1996 (the "Act").

2. This affidavit addresses in particular the claims made by Incumbent Local Exchange Companies (ILECs) regarding their entitlement to recovery of historical embedded costs in the rates charged competitors for interconnection and unbundled network elements. A number of ILECs describe (but do not quantify) differences between historical embedded "revenue requirement" costs and the forward-looking Total Service Long Run Incremental Cost (TSLRIC) of the services and facilities that the ILECs will be providing pursuant to Section 251 of the Act, and assert that the failure to recover historical embedded costs will have deleterious effects upon the ILECs.[1]

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1. See, e.g., SBC Communications Comments at 89; Bell Atlantic Comments at 36; BellSouth Comments at 57; Ameritech Comments at 68-70; see also Affidavit of Prof. Jerry A. Hausman, attached to USTA Comments, para. 3-13.

Findings of the ETI Study

3. In response to these arguments from the ILECs and USTA expert Hausman, we present specific empirical evidence from an ETI Study entitled *Analysis of Incumbent LEC Embedded Investment: An Empirical Perspective on the "Gap" Between Historic Costs and Forward-looking TSLRIC* ("ETI Study"), which appears as Attachment C to this affidavit. In particular, the ETI Study examines critically the notion, implicit in the arguments raised by the ILECs, that their books reflect a relatively large base of old, obsolete plant, acquired under pre-competitive conditions at a high cost relative to current prices, which the ILECs assert explains the divergence between ILEC accounting books and TSLRIC.

4. Although ETI's empirical analysis was necessarily constrained by the limited availability of ILEC data, we nevertheless find that, as a general proposition and contrary to ILEC claims and other "conventional wisdom," the existence of a "gap" between historical embedded costs and TSLRIC results *cannot* be ascribed to the obsolescence or (relative to current prices) high cost of plant put in place to satisfy basic service demand as part of any explicit or implicit pre-competition regulatory bargain imposed upon the ILECs. Rather, a primary driver of ILEC plant additions and retirements over the past few years was related to and motivated by the ILECs' pursuit of other strategic business goals and positioning for entry into new lines of business.

5. As described further below, the analyses presented in the ETI Study provide specific empirical evidence demonstrating that:

- The majority of plant carried on the ILECs' books is relatively new, having been acquired during the 1990s – a time period in which fundamental regulatory changes, competitive inroads, and corresponding strategic responses were clearly being contemplated and addressed by the ILECs;

- In the aggregate, newer vintage plant is replacing the older vintages at the steady pace of approximately 5%-10% per year, such that in the next several years, during the transition to a more competitive local exchange market environment, the ILECs will have replaced or retired virtually all categories of their pre-1990 embedded base of plant that has become economically and/or technologically obsolete;

- Of the plant acquired since January 1, 1990 that now constitutes the majority of the ILECs' net rate base, only a relatively small fraction of the gross additions in digital switching and outside plant distribution facilities can be shown to have been required to support growth in basic service demand over this period;

- A large portion of the older (i.e., pre-1990) vintage plant remaining on the ILECs' books consists of physical assets whose economic values may have actually appreciated, in that similar plant is still being acquired at reproduction costs (such as those reflected in TSLRIC studies) that in many cases are likely to be *greater* than the original (historic) acquisition cost.

6. In addition, the ETI Study also examines several case studies and other anecdotal evidence that further supports and expounds upon the conclusions of the quantitative empirical analyses. These include:

- ILEC involvement in the market for advanced Centrex-type services which, unlike POTS services, required the use of digital (as distinct from analog) central office switches, may have motivated the unnecessarily early replacement of analog central office switching plant and the massive overconstruction of outside plant;

- ILEC efforts to expand the market for additional residential lines and other discretionary services, required the ILECs to design and construct far more extensive feeder and distribution infrastructures (and expend far greater aggregate capital investments) than otherwise would have been required to provision basic local

exchange service, and appears to overwhelm simple growth in basic local exchange line demand as a principal capital investment driver; and

- ILEC strategic positioning in the market for advanced and broadband digital services, has resulted in the ILECs significantly increasing feeder facilities relative to those actually required to meet demand for basic local exchange lines and other POTS services, and provides a far better explanation for capacity expansion than simple POTS demand growth.

The foregoing statements are true and correct to the best of our knowledge, information and belief. Executed on May 29, 1996.

LEE L. SELWYN

PATRICIA D. KRAVTIN

Statement of Qualifications

DR. LEE L. SELWYN

Dr. Lee L. Selwyn has been actively involved in the telecommunications field for more than twenty-five years, and is an internationally recognized authority on telecommunications regulation, economics and public policy. Dr. Selwyn founded the firm of Economics and Technology, Inc. in 1972, and has served as its President since that date. He received his Ph.D. degree from the Alfred P. Sloan School of Management at the Massachusetts Institute of Technology. He also holds a Master of Science degree in Industrial Management from MIT and a Bachelor of Arts degree with honors in Economics from Queens College of the City University of New York.

Dr. Selwyn has testified as an expert on rate design, service cost analysis, form of regulation, and other telecommunications policy issues in telecommunications regulatory proceedings before some forty state commissions, the Federal Communications Commission and the Canadian Radio-television and Telecommunications Commission, among others. He has appeared as a witness on behalf of commercial organizations, non-profit institutions, as well as local, state and federal government authorities responsible for telecommunications regulation and consumer advocacy.

He has served or is now serving as a consultant to numerous state utilities commissions including those in Arizona, Minnesota, Kansas, Kentucky, the District of Columbia, Connecticut, California, Delaware, Maine, Massachusetts, New Hampshire, Vermont, New Mexico, Wisconsin and Washington State, the Office of Telecommunications Policy (Executive Office of the President), the National Telecommunications and Information Administration, the Federal Communications Commission, the Canadian Radio-television and Telecommunications Commission, the United Kingdom Office of Telecommunications, and the Secretaria de Comunicaciones y Transportes of the Republic of Mexico. He has also served as an advisor on telecommunications regulatory matters to the International Communications Association and the Ad Hoc Telecommunications Users Committee, as well as to a number of major corporate telecommunications users, information services providers, paging and cellular carriers, and specialized access services carriers.

Dr. Selwyn has presented testimony as an invited witness before the U.S. House of Representatives Subcommittee on Telecommunications, Consumer Protection and Finance and before the U.S. Senate Judiciary Committee, on subjects dealing with restructuring and deregulation of portions of the telecommunications industry.

In 1970, he was awarded a Post-Doctoral Research Grant in Public Utility Economics under a program sponsored by the American Telephone and Telegraph Company, to conduct research on the economic effects of telephone rate structures upon the computer time sharing industry. This work was conducted at Harvard University's Program on Technology and Society, where he was appointed as a Research Associate. Dr. Selwyn was also a member of the faculty at the College of Business Administration at Boston University from 1968 until 1973, where he

taught courses in economics, finance and management information systems.

Dr. Selwyn has published numerous papers and articles in professional and trade journals on the subject of telecommunications service regulation, cost methodology, rate design and pricing policy. These have included:

"Taxes, Corporate Financial Policy and Return to Investors"
National Tax Journal, Vol. XX, No.4. December 1967.

"Pricing Telephone Terminal Equipment Under Competition"
Public Utilities Fortnightly, December 8, 1977.

"Deregulation, Competition, and Regulatory Responsibility in the Telecommunications Industry"
Presented at the 1979 Rate Symposium on Problems of Regulated Industries - Sponsored by: The American University, Foster Associates, Inc., Missouri Public Service Commission, University of Missouri-Columbia, Kansas City, MO, February 11 - 14, 1979.

"Sifting Out the Economic Costs of Terminal Equipment Services"
Telephone Engineer and Management, October 15, 1979.

"Usage-Sensitive Pricing" (with G. F. Borton)
(a three part series)
Telephony, January 7, 28, February 11, 1980.

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